

REMARKS

This Amendment is in response to the final Office Action mailed on December 14, 2010. Claim 1 is amended to include the features of original claim 9. Claim 9 is cancelled without prejudice or disclaimer. No new matter is added. Claims 1-3, 5-8 and 10 are pending.

Specification Objections:

The title is objected to for not clearly indicating the invention to which the claims are directed. The title is amended as suggested by the Examiner. Withdrawal of this objection is requested.

§103 Rejections:

Claims 1-3, 5, 6, 8 and 10 are rejected as being unpatentable over Kim (US Patent No. 5, 987,904) in view of Lazar (US Patent No. 2,747,391) and further in view of Clark (US Patent No. 6,619,045). This rejection is now moot as claim 1 is amended to include the features of claim 9. Claim 1 is discussed below with respect to the rejection of claim 9. Withdrawal of this rejection is requested. Applicant does not concede the correctness of this rejection.

Claims 7 and 9 are rejected as being unpatentable over Kim in view of Lazar in view of Clark and further in view of Howe (US Patent No. 4,420,679). Claim 7 depends from claim 1 and should be allowed for at least the same reasons discussed below with respect to claim 1. As claim 1 includes the features of claim 9, the rejection of claim 9 is now discussed with respect to claim 1. This rejection is traversed.

Claim 1 is directed to a cooling device that recites, among other features, that assuming that an area of the aperture is S and a diameter of the fan is R, the following relationship is satisfied: $1.5 \times \pi(R/2)^2 \leq S \leq 2 \times \pi(R/2)^2$.

The combination of Kim, Lazar, Clark and Howe does not teach or suggest these features. The rejection relies on Fig. 3 of Howe for teaching the above features of claim 1. However, Fig. 3 of Howe is silent as to the relationship of $1.5 \times \pi(R/2)^2 \leq S \leq 2 \times \pi(R/2)^2$. Also, it is unclear whether Fig. 3 of Howe is drawn to scale or even falls within

$\pi(R/2)^2 \leq S \leq 2 \times \pi(R/2)^2$. Also, it is unclear whether Fig. 3 of Howe is drawn to scale or even falls within the range of values to meet the relationship of claim 1.

Also, it would not be obvious to one skilled in the art to achieve the above features of claim 1 based on the teachings of Howe. An advantage of the above features of claim 1 is to weaken the flow speed of the discharged flow into the cooling chamber by causing the discharged flow and the sucked flow to collide with each other in the aperture (see page 4, lines 9-14 and page 9, lines 18-27 of the present application). This results in the following.

First, in the cooling chamber, moisture generated from an object to be cooled is floating as supercooling water. Thus, a non-turbulent flow of cold air is introduced into the cooling chamber so that a part of the supercooling water floating in the cooling chamber solidifies and deposits in the cooling chamber.

Second, a portion of the supercooling water generated in the cooling chamber enters the cooler space through the aperture. A collision between the discharged flow and the sucked flow causes a turbulent flow in the cooler space causing the floating supercooling water in the cooler space to sublime without being solidified and deposited.

Accordingly, by satisfying the relationship of claim 1, supercooling water in the cooling chamber solidifies and deposits in the cooling chamber while supercooling water in the cooler space sublimates, thereby reducing frost deposition in the cooler.

Howe is directed to a gas chromatographic oven using symmetrical flow of preheated premixed ambient air and does not contemplate the advantages achieved by requiring the relationship of claim 1 within the cooling device of claim 1. Thus, one skilled in the art would not look to modify the cooling device of Kim, Lazar and Clark to achieve the above features of claim 1 based on Howe.

For at least these reasons claim 1 is not suggested by the combination of Kim, Lazar, Clark and Howe and should be allowed. Claims 2, 3, 5-8 and 10 depend from claim 1 and should be allowed for at least the same reasons.

Conclusion:

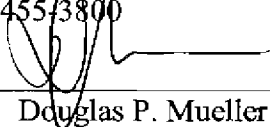
Applicants respectfully assert that the pending claims are in condition for allowance. If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Douglas P. Mueller (Reg. No. 30,300), at (612) 455-3804.



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~~February~~

Respectfully submitted,

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